EXHIBIT 6
DATE 2-2-07
HB 261

Montana Dental Association

Constituent: AMERICAN DENTAL ASSOCIATION

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February 2, 2007

The Montana Dental Association has adopted the Best Management Practices (BMP) developed by the American Dental Associations for dental offices on handling and disposal of amalgam waste. MDA strongly encourages our dentists to universally adhere to them. Many Montana dentists have adopted these measures, typically using chair-side traps and vacuum pump filters to catch amalgam waste and recycling the waste.

The Scientific Assessment commissioned by the American Dental Association in 2005 demonstrates that although amalgam separators remove some of the amalgam particles prior to the wastewater discharge, they do not significantly reduce the levels of mercury in the environment.

Adoption of BMPs alone result in approximately 77% of waste amalgam not reaching the sewer system. Separators would increase that percentage to 95%. However, because Publicly Owned Treatment Works (POTWs) [sewage treatment plants] capture 95% of waste amalgam that does enter their system (and, therefore, most of the amalgam waste that would be collected by amalgam separators), use of separators results in virtually no noticeable additional reduction in the amount of mercury discharged from the POTW in its effluent. The amount of mercury in the POTW effluent is what contributes to the release of mercury in the environment.

The amount of mercury from dental amalgam that reaches the surface water is very small (well under 1% of the total). This small amount is not in the form of methylmercury, nor is it easily convertible to methylmercury.

Dental amalgam fillings remain a commonly used dental restorative material that is more durable and more affordable than alternative restorative materials. There is currently no feasible substitute for dental amalgam in all applications. Total product substitution is not a viable option.

The contribution of dental amalgam to methylmercury concentrations in fish is low and even if dental amalgam were completely eliminated from wastewater it would not significantly reduce the levels of mercury in fish and surface water. The primary source of total mercury in surface water and fish is air deposition, not water discharges.

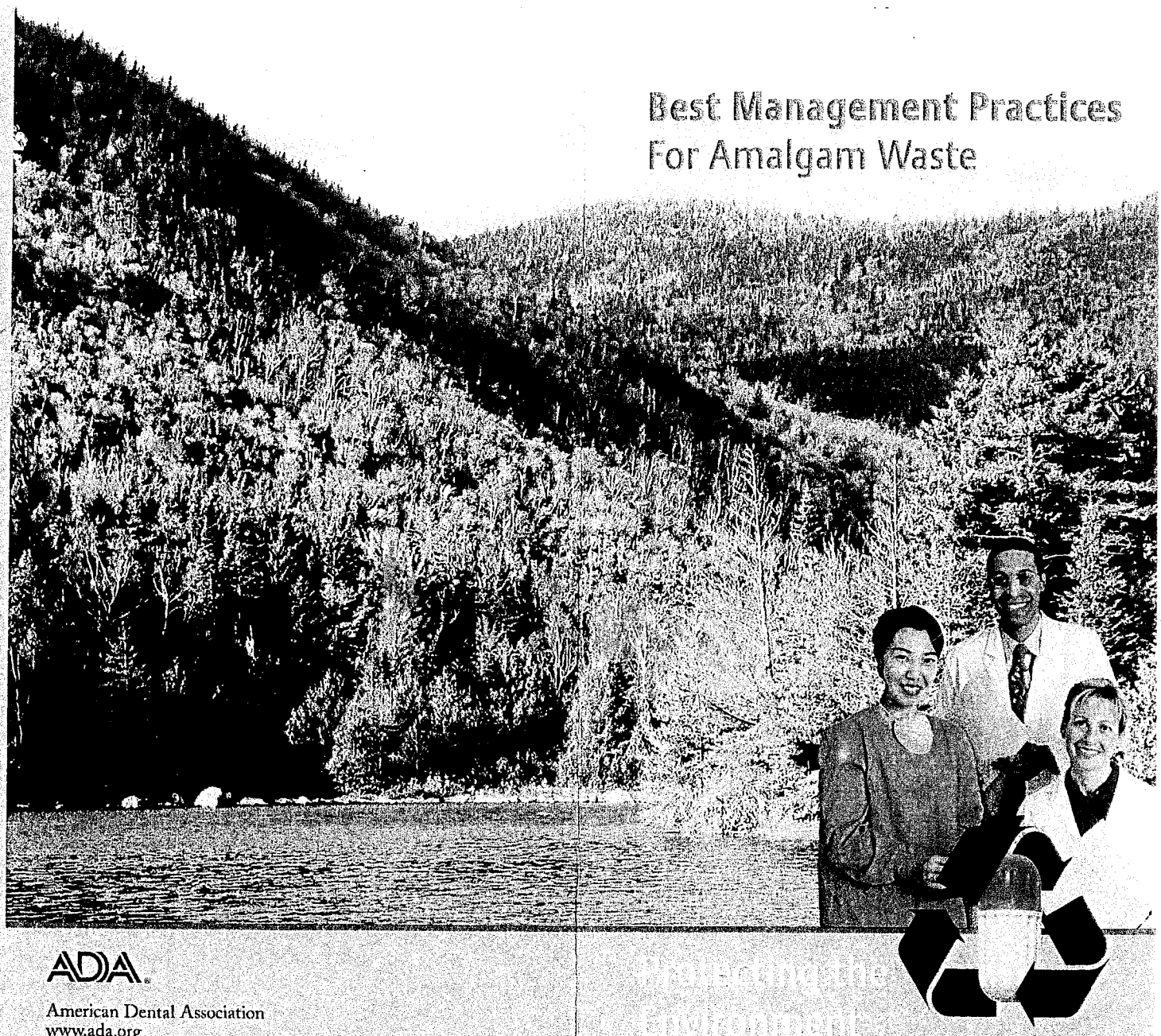
The percentage of mercury in surface waters, fish tissue, and sludge that is attributable to dental offices is far lower than many of the previous estimates, primarily because prior studies focused on the amount of amalgam purchased by dentists or the amount of amalgam discharged into sewer systems, rather than the amount of mercury that reaches the environment.

In Montana, where the local environmental conditions (i.e. mercury levels in surface waters, sludge, sediment or fish) do not exceed regulatory limits, stringent controls on mercury releases from dental offices should not be required.

The American Dental Association does not recommend universal adoption of amalgam separators because the presence of mercury in water bodies varies greatly by locality and from state to state. The ADA does not oppose the voluntary use of amalgam separators. In fact, there are areas in which installation of separators or other types of amalgam capture equipment may be the appropriate thing to do.

The ADA-commissioned Sociantific Assessment estimates the cost if all dentists were to install amalgam separators as compared to its effectiveness in removing mercury that would have reached the environment. Using traditional cost-effectiveness analysis and criteria, if all dentists were to install amalgam separators, the aggregate cost of doing so as compared to the expected benefit to the environment is wholly out of proportion when compared to regulatory requirements for mercury reduction measures that have been imposed on other industries. Alternatively, the ADA strongly supports voluntary compliance with BMPs and urges dental societies to do the same.

Best Management Practices For Amalgam Waste



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Dental Amalgam Waste can be recycled to help prevent the release of mercury to the environment. Following the simple suggestions outlined in this document will help protect the environment.

Concern about the effects of mercury in the environment has increased over the years. Mercury in the environment is bioaccumulative, which means that it can build up in fish and cause health problems in humans and other animals that eat fish. Many state health professionals recommend limiting fish consumption, especially for children and pregnant women.

Mercury is a naturally occurring metal; however, about half of the mercury released to the environment comes from human activity. Of that amount, 53 percent is emitted from combustion of fuels for energy production and 34 percent is from the combustion of waste.[1] Sources associated with manufacturers and consumers make up the remaining 13 percent, with dentistry contributing less than one percent.

Some mercury released into the air eventually collects in the waterways, where it enters the food chain. As a precautionary measure, U.S. regulators typically assume that all or most of the mercury released into the air or surface water may accumulate in fish. As of 2000, the U.S. EPA lists more than 43,971 miles (covering 3,426,244 acres) of rivers and streams in the U.S. as "impaired" because of the presence of mercury.[2]

Although mercury in the form of dental amalgam is very stable, amalgam should NOT be disposed of in the garbage, infectious waste "red bag," or sharps container. Amalgam also should NOT be rinsed down the drain. These cautions are important because some communities incinerate municipal garbage, medical waste, and sludge from wastewater treatment plants. If amalgam waste ends up in one of these incinerated waste streams, the mercury can be released to the environment due to the extremely high temperatures used in the incineration process. Increasingly, local communities are enacting restrictions on the incineration of wastes containing mercury.

The good news is that amalgam waste, kept separate from other waste, can be safely recycled. The mercury can be recovered from amalgam wastes through a distillation process and reused in new products. The ADA strongly recommends recycling as a best management practice for dental offices.

1 Office of Air Quality Planning and Standards. Office of Research and Development. Mercury Study Report to Congress. Volume II: An inventory of anthropogenic mercury emissions in the United States. Washington, D.C.: Environmental Protection Agency. Publication No. EPA-452/R-97-004. December 1997. p. ES-6.

2 EPA. Major Pollutants Causing Impairment by State. Available at www.epa.gov/owow/tmdl/303dcaus.html. Accessed February 10, 2004.

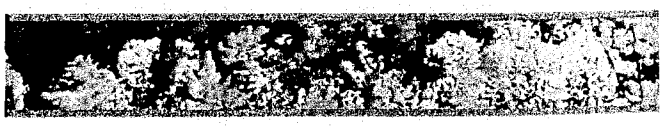
The following information demonstrates how to manage and dental amalgam waste to help protect the environment.

Types of Amalgam Waste

- **Non-contact amalgam (scrap)** is excess mix leftover at the end of procedure. Many recyclers will buy this clean scrap.
- **Contact amalgam** is amalgam that has been in contact with the p Examples are extracted teeth with amalgam restorations, carvin collected at chair side, and amalgam captured by chairside tr filters, or screens.
- **Chairside traps** capture amalgam waste during amalgam placem removal procedures (traps from dental units dedicated strictly t hygiene may be placed in the regular garbage).
- **Vacuum pump filters** or traps contain amalgam sludge and water recyclers will accept whole filters, while others will require spec handling of this material.
- **Amalgam sludge** is the mixture of liquid and solid material collec within vacuum pump filters or other amalgam capture devices.
- **Empty amalgam capsules** are the individually dosed containers le after mixing precapsulated dental amalgam.

Steps for Recycling Amalgam Waste

1. Stock amalgam capsules in a variety of sizes to minimize the amo amalgam waste generated.
2. Amalgam waste may be mixed with body fluids, such as saliva, or potentially infectious material, so use personal protective equipr such as utility gloves, mask, gown, and protective eyewear when handling it.
3. Contact an amalgam waste recycler about any special requiremen may exist in your area for collecting, storing and transporting am waste. If you need to find a recycler, check with your city, county local waste authority to see whether they have an amalgam waste recycling program.
4. Store amalgam waste in a covered plastic container labeled "Amal for Recycling" or as directed by your recycler. Consider keeping different types (e.g., contact and non-contact) of amalgam wastes separate containers – talk to your recycler about any advantages i doing so.



Questions to Ask Your Amalgam Waste Recycler

Below is a list of questions you may want to ask your amalgam waste recycler. Note that not all recycling companies accept every type of amalgam waste, and the services offered by recyclers vary widely. The ADA recommends that you contact a recycler before recovering amalgam and ask about any specific handling instructions the recycler may have. Importantly, select a reputable company that complies with applicable federal and state law and provides adequate indemnification for its acts and omissions.

Ask Your Recycler...

- What kind of amalgam waste do you accept?
- Do your services include pick up of amalgam waste from dental offices? If not, can amalgam waste be shipped to you?
- Do you provide packaging for storage, pick up or shipping of amalgam waste?
- If packaging is not provided, how should the waste be packaged?
- What types of waste can be packaged together?
- Do you accept whole filters from the vacuum pump for recycling?
- Is disinfection required for amalgam waste?
- How much do your services cost?
- Do you pay for clean non-contact amalgam (scrap)?
- Do you accept extracted teeth with amalgam restorations?
- Does your company have an EPA or applicable state license?
- Does your company use the proper forms required by the EPA and state agencies?

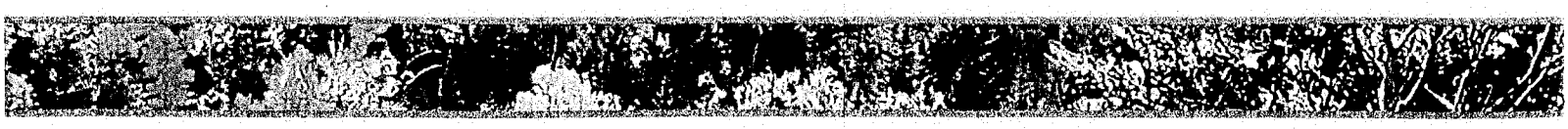
Additional Resources

"Dental Mercury Hygiene Recommendations" are available through the ADA Division of Science. These recommendations were published in the *Journal of the American Dental Association* (Nov. 2003) and also are available to ADA members online.

For Best Management Practices for Amalgam Waste, www.ada.org/goto/amalgambmp.

The ADA recommends against the use of bulk elemental mercury, also referred to as liquid or raw mercury, for use in the dental office. Since 1984, the ADA has recommended use of precapsulated amalgam alloy. If you still have bulk elemental mercury in the office, you should recycle it. Check with a licensed recycler to determine whether they will accept bulk mercury. DO NOT pour bulk elemental mercury waste in the garbage, red bag or down the drain. You also should check with your state regulatory agency and municipality to find out if a bulk mercury collection program is available. Such bulk mercury collection programs provide an easy way to dispose of bulk mercury.

The American Dental Association's Best Management Practices have been adopted by the Association to provide general guidelines for dentists across the nation. Dentists should be aware, however, that in some areas different guidelines or requirements may exist. Dentists should ascertain from their state or local dental societies whether specific BMPs or other requirements are applicable.



Best Management Practices for Amalgam Waste

DO	*DON'T*
Do use precapsulated alloys and stock a variety of capsule sizes	Don't use bulk mercury
Do recycle used disposable amalgam capsules	Don't put used disposable amalgam capsules in biohazard containers, infectious waste containers (red bags) or regular garbage
Do salvage, store and recycle non-contact amalgam (scrap amalgam)	Don't put non-contact amalgam waste in biohazard containers, infectious waste containers (red bags) or regular garbage
Do salvage (contact) amalgam pieces from restorations after removal and recycle the amalgam waste	Don't put contact amalgam waste in biohazard containers, infectious waste containers (red bags) or regular garbage
Do use chairside traps to retain amalgam and recycle the content	Don't rinse chairside traps containing amalgam over drains or sinks
Do recycle contents retained by the vacuum pump filter or other amalgam collection device, if they contain amalgam	Don't rinse vacuum pump filters containing amalgam or other amalgam collection devices over drains or sinks
Do recycle teeth that contain amalgam restorations *(Note: Ask your recycler whether or not extracted teeth with amalgam restorations require disinfection.)*	Don't dispose of extracted teeth that contain amalgam restorations in biohazard containers, infectious waste containers (red bags), sharps containers or regular garbage
Do manage amalgam waste through recycling as much as possible	Don't flush amalgam waste down the drain or toilet
Do use line cleaners that minimize dissolution of amalgam	Don't use bleach or chlorine-containing cleaners to flush wastewater lines

Practical Guide to Integrating BMPs Into Your Practice

Non-contact (scrap) amalgam

- Place non-contact, scrap amalgam in a wide-mouthed, airtight cor that is marked "Non-contact Amalgam Waste for Recycling."
- Make sure the container lid is well sealed.

Amalgam capsules

- Stock amalgam capsules in a variety of sizes.
- After mixing amalgam, place the empty capsules in a wide-mouthe airtight container that is marked "Amalgam Waste for Recycling."
- Capsules that cannot be emptied should likewise be placed in a wide-mc airtight container that is marked "Amalgam Capsule Waste for Rec
- Make sure the container lid is well sealed.
- When the container is full, send it to a recycler.

Disposable chairside traps

- Open the chairside unit to expose the trap.
- Remove the trap and place it directly into a wide-mouthed, airtigh container that is marked "Contact Amalgam Waste for Recycling."
- Make sure the container lid is well sealed.
- When the container is full, send it to a recycler.
- Traps from dental units dedicated strictly to hygiene may be placed with the regular garbage.

Reusable chairside traps

- Open the chairside unit to expose the trap.
- Remove the trap and empty the contents into a wide-mouthed, airt container that is marked "Contact Amalgam Waste for Recycling."
- Make sure the container lid is well sealed.
- When the container is full, send it to a recycler.
- Replace the trap into the chairside unit (Do not rinse the trap under rur water as this could introduce dental amalgam into the waste strean

Vacuum pump filters

- Change the filter according to the manufacturer's recommended sch *Note: The following instructions assume that your recycler will acce whole filters; some recyclers require different handling of this mate so check with your recycler first.*
- Remove the filter. While holding the filter over a tray or other containe can catch any spills, decant as much of the liquid as possible without any visible amalgam. The decanted amalgam-free liquid can be rins down the drain.
- Put the lid on the filter and place the sealed container in the box in it was originally shipped. When the box is full, the filters should be rec

Line Cleaners

- Use non-bleach, non-chlorine–containing line cleaners, which will min amalgam dissolution.

American Dental Association
www.ada.org

August 1, 2005

Summary of Recent Study of Dental Amalgam in Wastewater

Prepared by the American Dental Association

Mercury in surface waters is a topic gaining much attention. The primary source of mercury in surface waters is air deposition. Nevertheless, in some areas, there is increased regulatory pressure to control mercury in wastewater discharged to surface waters. When this occurs, estimates of the environmental contribution of mercury from dental office wastewater (in the form of dental amalgam, a stable alloy of silver, tin, copper, zinc and elemental mercury) may need to be considered. As a result, it is important that scientifically sound numbers be developed to identify the actual and relative contributions of mercury from dental office wastewater. Further, an assessment of the actual amount of dental amalgam captured by various dental office controls is needed.

The American Dental Association commissioned a scientific assessment of these and other questions. The assessment was submitted to various EPA officials, the Association of Metropolitan Sewerage Agencies (AMSA), and other reviewers. The basic conclusions of the assessment are consistent with other studies cited in the assessment. This assessment titled, "An assessment of mercury in the form of amalgam in dental wastewater in the United States" is published in the peer-reviewed journal, *Water, Air and Soil Pollution.*[1]

Amalgam particle waste is generated during placement or removal of amalgam restorations. Most of the amalgam waste discharged in dental office wastewater is in the form of particles. A scientific assessment was recently conducted to estimate the amount of amalgam waste in wastewater, how much of it reaches wastewater treatment plants, and how much of it is discharged by the treatment plants to surface waters. A summary of the results of this assessment follows.

Measuring the exact amount of amalgam waste being generated and discharged from a dental office is a very difficult task. The discharge of amalgam waste into sewerage systems is complicated by the fact that this waste is generated on an intermittent basis with huge day-to-day and even minute-to-minute variations. Methods such as sampling from drain or sewer lines, or even collecting total waste over several days show huge variations that are difficult to extrapolate into total waste generated over a year. For these

[1] Vandeven JA. McGinnis SL. An Assessment of Mercury in the Form of Amalgam in Dental Wastewater in the United States. Water Air & Soil Pollution. 2005 June;164(1-4):349-66.

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reasons, sampling dental office wastewater discharge does not provide either an accurate or reliable estimate of discharge.

One common engineering method employed in environmental science to overcome this limitation is the mass balance approach. This method uses existing data on the total amount of amalgam used, the known performance of existing capture devices, and the types and proportions of waste generated when placing and removing amalgam restorations to determine how much and where this waste is either being captured or discharged. The mass balance assessment tracks the total amount of amalgam used and removed from the dental office source, all the way through the waste processing and collection system, to determine both where the amalgam waste ends up and how much is captured at each part of the process.

In a mass balance assessment of the annual amount of amalgam discharged in dental wastewater nationally in 2001, it was estimated that 29.7 tons of mercury in the form of amalgam was discharged into dental units by dental offices. Chair-side traps in dental units and vacuum pump filters captured 78% (23.2 tons) of the mercury in the form of amalgam. Approximately 6.5 tons of mercury in the form of amalgam discharged from dental offices was determined to have reached the wastewater treatment plants, which captured 6.2 tons (95%) of this discharge. The remaining 0.3 tons was discharged as effluent to surface waters.

Of the 6.2 tons of mercury (in the form of amalgam) captured by wastewater treatment plants nationally, 1.6 tons was disposed of in the form of filter grit solids and 4.6 tons ended up in treatment plant biosolids. Approximately 1 ton of the biosolids was incinerated nationwide, with the incinerator emission controls capturing 0.8 tons of the mercury. This resulted in 0.2 tons of mercury being emitted to the atmosphere. Of this atmospheric emission, approximately 0.1 ton was deposited in the United States, (based on an EPA estimate that one third of the atmospheric mercury generated in the United States is eventually deposited in this country). Thus, based on this mass balance assessment, a total of 0.4 tons (0.3 tons from wastewater treatment plant effluent and 0.1 ton from air deposition) of mercury entering surface waters in the United States could be attributed to dental office discharge.

It is important to put this number in context. In the 1997 EPA Mercury Study Report to Congress, it was estimated the mercury emission in the United States is 158 tons annually. Thus an estimated 52.6 tons is deposited, based on the EPA estimate that one third of the mercury emission is deposited in this country. By comparison, the 0.4 tons from amalgam waste entering surface waters is 0.76% of the estimated deposit for all mercury emission in the United States.

It is also useful to assess the additional amount of dental amalgam likely to be captured through the use of ISO-compliant amalgam separators, and at what cost. The soon-to-be published assessment addresses both of these points. The use of ISO-compliant amalgam separators (95% amalgam removal efficiency) would reduce the estimated discharge of mercury in the form of amalgam to wastewater treatment plants to 0.3 tons. Due to the size distribution of amalgam particles, this form of mercury in the form of dental amalgam is unlikely to be captured by the wastewater treatment plant and would be discharged in the effluent. In other words, the use of separators is unlikely to have any material impact on mercury in treatment plant effluent—the amount so discharged, with or without separators, is approximately 0.3 tons. The use of amalgam separators, however, would likely result in the virtual elimination of the deposition of 0.1 ton of mercury from the incineration of amalgam in biosolids.

With an estimated annual cost of $76 million to $114 million for the purchase, installation and maintenance of amalgam separators in dental offices in the United States, the annual cost of removing 1 ton of mercury through amalgam separators is estimated to be $760 million to $1.14 billion. Even if the use of amalgam separators could reduce the mercury in wastewater treatment plant effluent by 29% (an unlikely result) resulting in 0.2 tons of mercury discharged to surface waters, the annual cost of removing 1 ton of mercury is estimated to be $380 million to $570 million.

The American Dental Association has published a set of recommended Best Management Practices for Waste Amalgam. These BMPs have been widely distributed, in a variety of formats, to dentists throughout the country. Compliance with the BMPs will result in substantial reductions of dental amalgam in dental office wastewater, without the extraordinary costs of mandatory separators. The BMPs are available on www.ada.org/goto/amalgambmp. For more information contact the ADA's Division of Science at 312/440-2878 or science@ada.org.

Numerical Summary

Mercury in the form of amalgam discharged into dental units: 29.7 tons

Mercury in the form of amalgam captured by chair-side traps and vacuum pump filters: 23.2 tons

Mercury in the form of amalgam reaching publicly owned treatment works (POTWs): 6.5 tons

Mercury in the form of amalgam captured by POTWs in grit solids and biosolids: 6.2 tons

Mercury in the form of amalgam discharged as effluent from POTWs to surface waters: 0.3 ton

Mercury in the form of amalgam in POTW biosolids: 4.6 tons

Mercury in the form of amalgam in POTW biosolids incinerated: 1.0 ton

Mercury from amalgam captured by incinerator emission controls: 0.8 ton

Mercury from amalgam emitted to the atmosphere from incineration of POTW biosolids: 0.2 ton

Mercury from incinerated amalgam deposited onto US surface waters: 0.1 ton

Total mercury in surface water attributable to amalgam in dental office wastewater: 0.4 ton

Number of dental offices to install amalgam separators: 95,066

Cost of purchase, installation and maintenance of amalgam separators: $76 million-$1.14 billion

Mercury in the form of amalgam reaching POTW after installation of amalgam separators: 0.3 tons

Mercury in the form of amalgam discharged as effluent from POTWs to surface waters after installation of amalgam separators: 0.3 ton

Mercury from incinerated amalgam deposited onto US surface waters after installation of amalgam separators: 0 ton

Total mercury in surface water attributable to amalgam in dental office wastewater: 0.3 ton

Reduction of mercury in surface waters attributable to amalgam in dental office wastewater after installation of amalgam separators: 0.1 ton

Cost of removing 1 ton of mercury through amalgam separators: $760 million-$1.14 billion

Cost of removing 1 ton of mercury through amalgam separators assuming 29% reduction of mercury in POTW effluent: $380 million -$570 million

Mercury Data and Montana Info
Response to Questions Related to HB 261 – (Rep. Jopek)

Information Compiled By: Bonnie Rouse, Business & Community Assistance Program, Montana Department of Environmental Quality – 406-841-5251 or brouse@mt.gov

Notes from DEQ:

EPA Region 8 handles the pre-treatment program for wastewater treatment plants in Montana. The requirement to sample for mercury depends on population served and industries located upstream.

Montana DEQ does handle discharge permits for wastewater treatment plants. Historically, permits have not required mercury sampling but new permits will have the requirement to test for mercury using methodology that can determine the specificity required for drinking water limits. Therefore, DEQ will have effluent data as new permits are issued and sampling data comes in.

Since 1975, extensive groundwater sampling has been conducted at public water supply sources and some samples have had spikes of mercury – however, many of these spikes occurred before year 2000 (methodology for sampling was different). It is thought that some mercury in water may be attributed to deposition from coal burning and forest fire ash. Other sources are naturally occurring and concentrations in water depend on local geology. DEQ's Source Water Protection Program generates this information.

Additional Comments specific to Montana

Economic impact to dentists

- ✓ Cost is $800 – to $1,200 per amalgam separator purchase, installation, and maintenance. Handling of waste is not included in this estimate.

Conversion Factors and Mercury Calculations:

1 Ton = 2000 Pounds

1 gallon of water (s.g. 1) = 8.33 pounds, therefore there are 240 gallons of water in a ton of water

Mercury is 13.61 times heavier than water (s.g. 13.61), therefore one gallon of mercury weighs 113.37 pounds

Based on these conversions, 1 ton of mercury is approximately 17.64 gallons

It is estimated that Montana surface waters receive between 0.40 and 1.12 cups of mercury per year – (without amalgam separators installed). Two methods for calculating these numbers follow.

✓ Method 1 = 1.12 cups mercury

Based on national data assumption of 0.4 tons of mercury amalgam waste entering surface waters - that amount of mercury is 7.05 gallons.

The ADA Summary Report (Attachment 3) estimates the number of dental offices in the United States at 95,066. The Montana Dental Association represents approximately 580 Montana dentists. If a conservative estimate of 1000 Montana practicing dentists is assumed, then Montana represents approximately 1% of the total waste mercury amalgam affecting surface waters. 1% of 7.05 gallons is .07 gallons.

0.07 gallons of amalgam mercury/ per year by Montana dentists – without separators **=1.12 cups**

✓ Method 2 = 0.4 cups mercury

Another way of looking at Montana generation of mercury amalgam waste to surface waters – (submitted by Bob Reinke, Hazardous Waste Specialist at DEQ)

ADA cites a paper that estimated U.S. dentists discharge approximately 0.4 tons of mercury to Waste Water Treatment Plants per year. That translates to 800 pounds of mercury amalgam.

Assuming a specific gravity of 13.61; 800 pounds of mercury has a volume of roughly 7.5 gallons (120 cups).

The population of Montana is approximately 1,000,000 people and the U.S. population is 300,000,000. Since the population of Montana is 1/300th of the U.S. population, Montana's amalgam release to Waste Water Treatment Plant is 1/300th the nation's 120 cups. Dividing 120 cups by 300 shows Montana may contribute **0.4 cups** of mercury amalgam to the state's surface waters.

Additional Background Information

Information from Washington Dental Association and Washington Department of Ecology (used with permission) -- see PowerPoint Presentation, Attachment 1

50% of mercury released to the environment comes from human activity.

Of that 50%:

- 53% is emitted from combustion of fuels for energy production
- 34% is from the combustion of waste
- 13% comes from other sources including manufacturers and consumers
- Dentistry contributes less than 1% (source not cited within presentation)

Dentists using both chair-side traps and pump traps capture 65-78% of amalgam waste.

Adding an ISO certified separator can improve amalgam waste capture to >95%

Separator Technologies include sedimentation, filtration, chemical filtration (chelation), centrifuging – or a combination of these technologies.

Information from Mercury-Added Product White Paper (Quicksilver Caucus), November 2006 – see White Paper, Attachment 2

Dental Amalgam

Mercury amalgam has been used in dentistry for over 100 years as a preferred tooth restorative material, since it is easy to work with and is durable.

Mercury comprises approximately half of the metals used in common mercury dental amalgam. The other metals are silver (35 percent), tin (9 percent), copper (6 percent), and zinc (1 percent).

Dental amalgam capsules contain between 100 and 1,000 milligrams of mercury.

According to the available data from the IMERC member states, as reported by the dental amalgam capsule manufacturers, the amount of mercury in the dental amalgam sold in 2001 in the U.S. was more than 30 tons. (Note: the ADA Summary discussed next states an amount of 29.7 tons for 2001)

As many other sectors discharging mercury have implemented mercury pollution prevention (P2) measures, dentists have become one of the largest common sources of mercury entering wastewater treatment plants.

Several recent studies (not cited within white paper) have determined that dental practices are now contributing between 40-50 percent of all mercury in wastewater influent. This data poses particular concern since mercury entering wastewater

treatment plants usually settles out in the sewage sludge, which eventually is either incinerated, heat treated, and/or land applied as bio-solids.

During the last decade, significant advances have taken place in the area of reducing mercury amalgam from dental facility wastewater discharges. Nearly two dozen brands of amalgam separators are now available that can trap 95 percent or more of the mercury amalgam. Many communities and states have enacted ordinances or promulgated rules requiring that dentists install and properly maintain amalgam separators.

(Note: Eight States have requirements for amalgam separators – Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont, and Washington, see Appendix C of White Paper)

Information from ADA – Summary of Recent Study of Dental Amalgam in Wastewater (August 5, 2005) taken from Article titled An Assessment of Mercury in the Form of Amalgam in Dental Wastewater in the United States – written by JA Vandeven and published in the peer reviewed journal Water, Air & Soil Pollution, June 2005) – See Attachment 3 for Summary

Due to fluctuations in day-to-day business practices – the mass balance assessment method was used to estimate the annual amount of amalgam discharged in the nation's wastewater. This method uses existing data on the total amount of amalgam used, the known performance of existing capture devices, and the types and proportions of waste generated when placing and removing amalgam restorations to determine how much and where this waste is either being captured or discharged.

Existing data shows that the annual amount of mercury amalgam discharged in dental wastewater nationally in 2001 was estimated at 29.7 tons of mercury in the form of amalgam.

Chair-side traps in dental units and vacuum pump filters captured 78% (23.2 tons) of the mercury in the form of amalgam. (Note that 78% is the high end of the efficiency scale.)

Approximately 6.5 tons of mercury in the form of amalgam discharged from dental offices was determined to have reached wastewater treatment plants.

Wastewater treatment plants captured 6.2 tons (95%) of this discharge. The remaining 0.3 tons was discharged as effluent to surface waters.

Of the 6.2 tons of mercury (in the form of amalgam) captured by wastewater treatment plants nationally, 1.6 tons was disposed of in the form of filter grit solids and 4.6 tons ended up in treatment plant bio-solids.

Approximately one ton of the bio-solids were incinerated nationwide, with the incinerator emission controls capturing 0.8 tons of the mercury (note – in Montana, bio-solids are not incinerated.)

This results in 0.2 tons of mercury being emitted to the atmosphere. Of this atmospheric emission, approximately 0.1 ton was deposited in the United States.

In Summation, based on this mass balance assessment, a total of 0.4 tons (0.3 tons from wastewater treatment plant effluent and 0.1 ton from air deposition) of mercury entering surface waters in the United States could be attributed to dental office discharge.

The 1997 EPA Mercury Study Report to Congress estimates approximately 52.6 tons of mercury emissions are deposited in the U.S. annually. Amalgam waste entering surface waters is estimated to be 0.4 tons annually. This amount accounts for approximately 0.76% of the estimated deposit for all mercury emissions in the United States.